ABSTRACT

The invention includes a composition of matter and method that utilizes energy transfer between one or more donor and acceptor molecules. The composition of matter includes an encapsulation vesicle having a matrix, a surface coating of an organo-metallic complex and a transparent protection layer. The transparent protection layer is capable of modification by addition of biomolecules to the surface in order to bind other molecules. The proximity of the bound biomolecules to the protective layer allows for energy transfer from a donor molecule internal to the protection layer to an acceptor molecule outside the protection layer. The protection layer acts to diminish the effects of collisional quenching on the donor molecules caused by ubiquitous small molecules such as molecular oxygen. The application also teaches a method of making and applying the complexes to immunoassays.